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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/681,513	10/08/2003	Marie-France Boyaud	CA920010028US2 (IEN-10-57)	9654
26681	7590	03/02/2005	EXAMINER GEYER, SCOTT B	
DRIGGS, LUCAS BRUBAKER & HOGG CO. L.P.A. DEPT. IEN 8522 EAST AVENUE MENTOR, OH 44060			ART UNIT 2812	PAPER NUMBER

DATE MAILED: 03/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/681,513

Applicant(s)

BOYAUD ET AL.

Examiner

Scott B. Geyer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 1-9 and 13-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 10/167,635.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>1003</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 10-12, drawn to a packaged semiconductor device, classified in class 257, subclass 787.
- II. Claims 1-9 and 13-17, drawn to a molding apparatus, classified in class 425, subclass 542+.

2. The inventions are distinct, each from the other because of the following reasons:

**2A.** Inventions I and II are related as apparatus and product made. The inventions in this relationship are distinct if either or both of the following can be shown: (1) that the apparatus as claimed is not an obvious apparatus for making the product and the apparatus can be used for making a different product or (2) that the product as claimed can be made by another and materially different apparatus (MPEP § 806.05(g)). In this case the product as claimed can be made by a materially different process such as under-filling by dispensing encapsulant with a needle adjacent a flip-chip and drawing the encapsulant underneath the chip using capillary action and/or vacuum suction, and glob-top encapsulation for over-molding a chip or around the sides of the chip. For example, see: Muff et al. (6,534,345 B1) or Mitchell et al. (6,046,076).

**2B.** Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

**2C.** Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

**4.** During a telephone conversation with Mr. William Hogg on February 22, 2005 a provisional election was made without traverse to prosecute the invention of group I, claims 10-12. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-9 and 13-17 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

**5.** Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

#### ***Priority***

**6.** Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 10/167,635, filed on June 12, 2002.

#### ***Information Disclosure Statement***

**7.** The references cited within the IDS document, submitted on October 8, 2003 (paper no. 1003), have been considered.

***Drawings***

8. The drawings submitted on October 8, 2003 are acceptable.

***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 10 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Barber (5,700,723).

10A. As to claim 10, Barber teaches in figure 4 an integrated chip **12** mounted on top of a substrate **10** in a standoff relationship (i.e. a flip-chip). An encapsulant body **24** is adhered to the top of the substrate **10**, which also encapsulates the chip **12** and the space **16** between the chip and the substrate (i.e. under-fill). At least one elongated channel extends outwardly from the main encapsulant body along the top of the substrate, which is shown in figure 4.

10B. As to claim 12, Barber teaches the encapsulated body as an 'overmolded' encapsulant body.

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(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

11. Claims 10 and 12 are rejected under 35 U.S.C. 102(a) as being anticipated by Sawai (6,177,724 B1).

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**11A.** As to **claim 10**, Sawai teaches in figure 3 an integrated chip **4** mounted on top of a substrate **2** in a standoff relationship (i.e. a flip-chip). An encapsulant body **1a** is adhered to the top of the substrate **2**, which also encapsulates the chip **4** and the space between the chip and the substrate (i.e. under-fill). At least one elongated channel extends outwardly from the main encapsulant body along the top of the substrate, which is shown in figure 3 by numeral **1b**.

**11B.** As to **claim 12**, Sawai teaches the encapsulated body as an 'overmolded' encapsulant body.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**12.** Claims 10-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Kumamoto et al. (6,632,704 B2).

**12A.** As to **claim 10**, Kumamoto et al. teach in figure 2f an encapsulated integrated circuit package. A chip **110** is mounted to the top surface of a substrate **120**, in a stand-off relationship (i.e. a flip-chip). Encapsulant **250** is adhered to the top surface of the substrate **120** and encapsulant also fills in the space underneath the chip **110** between the solder balls **130**. A channel of encapsulant adhered to the top of the substrate extends along the substrate outwardly from the chip **110**.

**12B.** As to **claim 11**, Kumamoto et al. teach the encapsulant extending outwardly from the chip **110** to a secondary encapsulated body **140** on the substrate **120**.

**12C.** As to **claim 12**, Kumamoto et al. teach the encapsulant body is an overmolded encapsulant body (i.e. the encapsulant is molded over the substrate).

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The following references are considered by the examiner to be related to the applicant's invention:

Hirakawa (6,011,694) – see figure 4;

Lin (6,413,801 B1) – see figures 4 and 5;

Lunceford (6,306,688 B1) – see figure 5.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott B. Geyer whose telephone number is (571) 272-1958. The examiner can normally be reached on weekdays, between 10:00am - 6:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Scott B. Geyer  
Patent Examiner  
Art Unit 2812  
February 23, 2005

SCOTT GEYER  
PATENT EXAMINER

*SBG* 2/23/05